# **EXHIBIT "I"**

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Robert A. Middleberg, PhD, DABFT, DABCC-TC, Laboratory Director

**Toxicology Report** 

Report Issued 07/31/2013 18:03

Patient Name Patient ID

RAILO, CAITLIN 13ML-487 (4973209)

Chain

11265232

Age

Not Given

Gender Workorder

Not Given 13185165

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To: 20021

NY Police Crime Laboratory, Mid Hudson

Tech. Lt Stephen Jiampetti Mid Hudson PO Box 10131 Newburgh, NY 12552

Positive Findings:

Compound	Result	Units	Matrix Source
Morphine - Free	12	ng/mL	Blood
Diazepam	200	ng/mL	Blood
Nordiazepam	46	ng/mL	Blood

See Detailed Findings section for additional information

# **Testing Requested:**

Analysis Code	Description
8660B	Opiates - Free (Unconjugated), Blood
9329B	Benzodiazepines Panel, Blood

# Specimens Received:

ID Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Miscellaneous Information
001 Gray Top Tube 002 Gray Top Tube 003 Cardboard Box	6.5 mL 3.8 mL	Not Given Not Given	Blood Blood	
COC Caraboard Box	Not Given	Not Given	Shipping Container	

All sample volumes/weights are approximations.

Specimens received on 07/29/2013.



13ML-487 (4973209)

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### **Detailed Findings:**

			Rpt.		A Brede Dec
<b>Analysis and Comments</b>	Result	Units	Limit	Specimen Source	Analysis By
			10	001 - Blood	GC/MS
Morphine - Free	12	ng/mL	10		LC-MS/MS
Diazepam	200	ng/mL	20	001 - Blood	FC-1012/1012
Diazepain	40		20	001 - Blood	LC-MS/MS
Nordiazepam	46	ng/mL	20	00 1 - Di00d	

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

#### **Reference Comments:**

## Diazepam (Valium®) - Blood:

Diazepam is a benzodiazepine used primarily for its sedative anxiolytic or muscle relaxing effects. It is a U.S. DEA Schedule IV listed central nervous system depressant, and patients using this medication are warned accordingly, especially concerning motor functions. It is habituating, and frequently abused. It is metabolized to several pharmacologically active compounds: nordiazepam, oxazepam and temazepam. In order to evaluate the effects of this compound, concentrations of these metabolites must also be considered.

The reported diazepam concentration in a chronic steady-state regimen of 5 mg twice daily ranges from 100 -400 ng/mL with nordiazepam being in the range of 130 - 500 ng/mL. Oxazepam and temazepam may be present in low concentrations.

Toxic effects may be produced by blood concentrations in excess of 1500 ng/mL; fatalities produced by diazepam alone are rare, but may occur at blood concentrations greater than 5000 ng/mL. Alcohol greatly enhances the activity of the benzodiazepines.

#### Morphine - Free - Blood:

Morphine is a DEA Schedule II narcotic analgesic. In analgesic therapy, it is usually encountered as the parent compound, however, it is also commonly found as the metabolite of codeine and heroin. In illicit preparations from which morphine may arise, codeine may be present as a contaminant. A large portion of the morphine is bound to the blood proteins or is conjugated; that which is not bound or conjugated is termed 'free morphine'. Hydromorphone is a reported metabolite of morphine.

In general, free morphine is the active biologic agent. Morphine has diverse effects that may include analgesia, drowsiness, nausea and respiratory depression. 6-monoacetylmorphine (6-MAM) is the 6-monoacetylated form of morphine, which is pharmacologically active. It is commonly found as the result of heroin use.

Peak serum concentrations occur within 10 to 20 minutes of a 10 mg/70 kg intramuscular dose, with an average concentration of 60 ng/mL 30 minutes following administration. IV administration of the same dose resulted in an average concentration of 80 ng/mL after 30 minutes. Chronic pain patients receiving an average of 90 mg (range 20 - 1460) daily oral morphine had average serum concentrations of 73 ng/mL (range 13 - 710) morphine. In 15 cases where cause of death was attributed to opiate toxicity (heroin, morphine or both), free morphine concentrations were 0 - 3700 ng/mL (mean = 420 +/- 940). In comparison, in cases where COD was unrelated to opiates (n=20) free morphine was 0 - 850 ng/mL (mean = 90 +/- 200). The ratio of whole blood concentration to serum or plasma concentration is approximately one.

#### 3. Nordiazepam - Blood:

Nordiazepam is a pharmacologically active metabolite of several benzodiazepine anxiolytic/sedative/hypnotic agents, e.g., diazepam (Valium®). Nordiazepam is also the major active entity in clorazepate (Tranxene®), a benzodiazepine agent used for agitation, seizures and anxiety. The action of this compound is based on its CNS-depressant activity.

Reported peak blood concentrations of nordiazepam following a single 15 mg oral dose of clorazepate were approximately 200 ng/mL at 2 hr. Chronic therapy with a daily oral dose of 22.5 mg clorazepate produced reported steady-state plasma concentrations of nordiazepam of 600 ng/mL whereas 50 mg produced average concentrations of 1600 ng/mL.

Chain of custody documentation has been maintained for the analyses performed by NMS Labs.

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Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded six (6) weeks from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Workorder 13185165 was electronically signed on 07/31/2013 17:04 by:

Daniel S. Isenschmid, Ph.D., D-ABFT Forensic Toxicologist

# Analysis Summary and Reporting Limits:

Acode 8660B - Opiates - Free (Unconjugated), Blood

-Analysis by Gas Chromatography/Mass Spectrometry (GC/MS) for:

Compound 6-Monoacetylmorphine - Free Codeine - Free Dihydrocodeine / Hydrocodol - Free Hydrocodone - Free	Rpt. Limit 10 ng/mL 10 ng/mL 10 ng/mL 10 ng/mL	Compound Hydromorphone - Free Morphine - Free Oxycodone - Free Oxymorphone - Free	<u>Rpt. Limit</u> 10 ng/mL 10 ng/mL 10 ng/mL 10 ng/mL
Hydrocodone - Free		Oxymorphone - Free	10 ng/

Acode 9329B - Benzodiazepines Panel, Blood

-Analysis by High Performance Liquid Chromatography/Tandem Mass Spectrometry (LC-MS/MS) for:

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Compound	Rpt. Limit	Compound	Rpt. Limit
	5.0 ng/mL	Flurazepam	2.0 ng/mL
1-Amino Clonazepam	5.0 ng/mL	Hydroxyethylflurazepam	5.0 ng/mL
Alpha-Hydroxyalprazolam	5.0 ng/mL	Hydroxytriazolam	5.0 ng/mL
Alprazolam	20 ng/mL	Lorazepam	5.0 ng/mL
Chlordiazepoxide	20 ng/mL	Midazolam	5.0 ng/mL
Clobazam	2.0 ng/mL	Nordiazepam	20 ng/mL
Clonazepam	5.0 ng/mL	Oxazepam	20 ng/mL
Desalkylflurazepam	20 ng/mL	Temazepam	20 ng/mL
Diazepam	5.0 ng/mL	Triazolam	4.0 ng/mL
Estazolam	J.O Hg/IIIL	111000	